

## Acronym list as of July 7, 2009

Å	Angstrom
A/D	Analog/Digital
ACE	Attitude Control Electronics
ACIS	AXAF CCD Imaging Spectrometer
ACS	Attitude Control System
ACTDP	Advanced Cryocooler Technology Development Program
ADAM™	ABLE Deployable Articulated Mast
ADR	Adiabatic Demagnetization Refrigerator
ADRC	ADR Controller
ADS	Attitude Determination System
AETD	Applied Engineering Technology Directorate
AGN	Active Galactic Nucleus
AH	Ampere-hour
AIM	Advanced Interferometric and Metrology
AIRS	Atmospheric Infrared Sounder
Al	Aluminum
ALMA	Atacama Large Millimeter Array
AO	Announcement of Opportunity
AOCS	Attitude and Orbit Control System
APRA	Astrophysics Research and Analysis
APS	Active Pixel Sensor
arcmin	arc minutes
arcsec	arc seconds
ASCA	Advanced Satellite for Cosmology & Astrophysics
ASIC	Application-Specific Integrated Circuit
ASIST	Advanced System for Integration and Spacecraft Testing
ATD	Advanced Technology Development
Au	Gold
AXAF	Advanced X-ray Astrophysics Facility
BAE	British Aerospace
BASD	Ball Aerospace Systems Division
BBXRT	Broad Band X-ray Telescope
BEPAC	NRC Beyond Einstein Program Assessment Committee
BGO	Bismuth Germanate
BH	Black Hole
BHC	Black Hole Candidates
BHFP	Black Hole Finder Probe
BI	Back-Illumination
Bi	Bismuth
B-MINE	Balloon-borne Microcalorimeter Nuclear Line Explorer
BN	Boron Nitride
BOL	Beginning of Life
bps	bits per second
BPSK	Bi-phase Shift Keying
C	Carbon
C	Celsius
C&DH	Command and Data Handling
CAA	Committee on Astronomy & Astrophysics
CAD	Computer-Aided Design
CADR	Continuous Adiabatic Demagnetization Refrigerator
CalDB	Calibration Database

## Acronym list as of July 7, 2009

CalTech	California Institute of Technology
CAT	Critical Angle Transmission
CBE	Current Best Estimate
cc	cubic centimeters
CCAFS	Cape Canaveral Air Force Station
CCB	Common Core Booster™
CCD	Charge-Coupled Device
CCE	Cryocooler Control Electronics
CCHPs	Constant Conductance Heat Pipes
CCSDS	Consultative Committee for Space Data System
Cd	Cadmium
CDA	Centroid Detector Assembly
CDF	Concurrent Design Facility
CDMS	Cryogenic Dark Matter Search
CDR	Critical Design Review
CdZnTe	Cadmium Zinc Telluride
CEA	Center Export Administrator
CEASE	Compact Environmental Anomaly Sensor
CESR	Centre d'Etude Spatiale des Rayonnements
CETDP	Cross Enterprise Technology Development Program
CfA	Center for Astrophysics
cfe	Core Flight Software Executive
CFPD	CCSDS File Delivery Protocol
CFR	Code of Federal Regulations
CG	ICoordination Group
CGRO	Compton Gamma Ray Observatory
ChaMP	Chandra Multiwavelength Project
ChIPS	Chandra Imaging and Plotting System
CIAO	Chandra Interactive Analysis of Observations
CIT	California Institute of Technology
CL	Confidence-level
CLASS	Communications Link Analysis and Simulation System
cm	centimeter
CMD	Commanding
CMM	Coordinate Measuring Machine
COBE	Cosmic Background Explorer
COI	Composite Optics, Inc.
Col. U	Colorado University
Con-X	Constellation-X
COSMOS	Cosmological Evolution Survey
COTS	Commercial Off-the-Shelf
CP/CM	Center of Pressure/Center of Mass
CPL	Capillary Pumped Loop
cps	counts per second
CPT	Comprehensive Performance Testing
CPU	Central Processing Unit
CRC	Cyclic Redundancy Code
CRIS	Cosmic Ray Isotope Spectrometer
Cs	Cesium
CSOC	Chandra Science Operations Center
CSR	Center for Space Research

## Acronym list as of July 7, 2009

CSS	Coarse Sun Sensor
C <sub>t</sub>	Critical Temperature
CTE	Coefficient of Thermal Expansion
CTI	Charge Transfer in Efficiency
cts	counts
Cu	Copper
CV	Cosmic Vision
CXC	Chandra X-ray Center
CY	Calendar Year
Cz	Critical Temperature
CZT	Cadmium Zinc Telluride
DA	Data Analysis
DARPA	Defense Advanced Research Projects Agency
DAS	Demand Access System
Db	Decibel
DC	Direct Current
DDF	Director's Discretionary Fund
DE	Dark Energy
DEA	Detector Electronics Assembly
Dec	Declination
DEPFET	Depleted P-channel Field Effect Transistor
DET	Direct Energy Transfer
DETF	Dark Energy Task Force
DM	Dark Matter
DOF	Degree-of-Freedom
DOORS	Dynamic Object Oriented Requirements System
DPE	Digital Processing Electronics
DRM	Design Reference Mission
DS-CdTe	Double-sided Strip Cadmium Telluride
DSN	Deep-Space Network
DSRI	Danish Space Research Institute
DSSD	Double-sided Si Strip Detector
DT&E	Development Test and Evaluation
E	Energy
ECRA	Electrical Contact Ring Assembly
E/PO	Education and Public Outreach
EAC	Estimate at Completion
EAR	Export Administration Regulations
EDCCD	Event Driven CCD
EDM	Electrical Discharge Machining
EEE	Electrical, Electronic and Electromechanical parts
EELV	Evolved Expendable Launch Vehicle
EEPROM	Electronically Erasable Programmable Read-Only Memory
EGSE	Electrical Ground Support Equipment
ELV	Expendable Launch Vehicle
EMI/EMC	Electromagnetic Interference/Compatibility
EMC	Electromagnetic Compatibility
EMI	Electromagnetic Interference
EO-1	Earth Observing-1
EOB	Extendable Optical Bench
EOL	End of Life

## Acronym list as of July 7, 2009

EOS	Earth Observing System
EOS	Equations of State
EPC	Electronic Power Converter
EPS	Electrical and Power Subsystem
ESA	European Space Agency
ESTEC	European Space Research and Technology Centre
ESP	Emission of Solar Protons
ET	Environmental Testing
ETU	Engineering Test Unit
EU	Engineering Unit
EUVE	Extreme Ultraviolet Explorer
eV	electron Volts
EVD	Engine Valve Driver
EVM	Earned Value Management
EXITE	Energetic X-ray Imaging Telescope Experiment
FAD	Formulation Authorization Document
FCB	Feedback/Controller Box
FDAB	Flight Dynamics Analysis Branch
FDF	Flight Dynamics Facility
FDM	Frequency Division Multiplexing
Fe	Iron
FEA	Finite Element Analysis
FEI	Frequency Electronics, Inc.
FEM	Finite Element Modeling
FFT	Fast Fourier Transform
FFT	Full Functional test
FI	Front Illuminated
FIP	Fixed Instrument Platform
FITS	Flexible Image Transport System
FMA	Flight Mirror Assembly
FOM	Figure of Merit
FOT	Flight Operations Team
FOV	Field of View
FPC	Focal Plane Camera
FPGA	Field Programmable Gate Arrays
FPM	Focal Plane Module
FPPD	Flight Programs and Projects Directorate
FRA	Focal plane Readout Array
FRR	Flight Readiness Review
FST	Facility Science Team
FSW	Flight Software
FTE	Full Time Equivalent
FTS	Fiducial Transfer System
FU	Flight Unit
FUSE	Far Ultraviolet Spectroscopic Explorer
FWC	Filter Wheel Control Electronics
FWHM	Full Width Half Maximum
FY	Fiscal Year
G	Gravity
GBK	Germanium Black Kapton
Gbit	Gibabit

## Acronym list as of July 7, 2009

Gbytes	Gigabytes
GCE	Gimbal Control Electronic
Ge	Germanium
GFE	Government Furnished Equipment
GLAS	Geoscience Laser Altimeter System
GLAST	Gamma Ray Large Area Space Telescope
gm	gram
GMST	Greenwich Mean Sidereal Time
GN&C	Guidance, Navigation & Control
GO	General Observer
GOES	Geostationary Operational Environmental Satellites
GPG	Goddard Procedure Guidelines
GPM	Global Precipitation Measurement
GR	General Relativity
GRACE	Gravity Recovery and Climate Explorer
GRB	Gamma Ray Burst
GREP	Graphite-Reinforced Epoxy
GRO	Compton Gamma Ray Observatory
GS	Ground System
GSE	Ground Support Equipment
GSFC	Goddard Space Flight Center
GUI	Graphical User Interface
H	hyperbolic
H/K	housekeeping
HAWC	High Resolution Airborne Wideband Camera
He	Helium
HEAO	High Energy Astrophysical Observatory
HEASARC	High Energy Astrophysics Science Archive Research Center
HEFT	High Energy Focusing Telescope
HEO	High Earth Orbit
HERO	High Energy Replicated Optics
HETE	High Energy Transient Experiment
HETG	High Energy Transmission Grating
HETG(S)	High Energy Transmission Grating (Spectrometer)
HEW	Half Energy Width
HGA	High Gain Antenna
HGAS	High Gain Antenna System
HK	Housekeeping data
HPB	High-Pressure Bridgeman
HPD	Half Power Diameter
HQ	Headquarters
HRC	High Resolution Camera
HST	Hubble Space Telescope
HTRS	High Time Resolution Spectrometer
HUDF	Hubble Ultra-Deep Field
HV	High Voltage
HXI	Hard X-ray Imager
HXT	Hard X-ray Telescope
Hz	Hertz
HZ	Hydrazine
I	Iodine

## Acronym list as of July 7, 2009

I&T	Integration and Test
I/F	Interface
I/O	Input/Output
ICD	Interface Control Document
ICE	Independent Cost Estimate
ICESat	Ice, Cloud, and Land Elevation Satellite
ID	Inner Diameter
IDC	Integrated Design Center
IDL	Instrument Design Lab
IGM	Intergalactic Medium
IIRT	Integrated Independent Review Team
IM	Instrument Manager
IM	Instrument Module
IMAGE	Imager for Magnetopause-to- Aurora Global Exploration
IMDC	Integrated Mission Design Center
INAF	Istituto Nazionale di Astrofisica
InFOC $\mu$ S	International Focusing Optics Collaboration for $\mu$ Crab Sensitivity
IP	Internet Protocol
IR	Infrared
IR&D	Independent Research and Development
IRU	Inertial Reference Unit
ISAL	Instrument Synthesis & Analysis Lab
ISAS	Institute of Space and Astronautical Sciences
ISOC	IXO Science and Operations Center
ISS	International Space Station
IT	Information Technology
ITAR	International Traffic in Arms Regulations
IV&V	Independent Verification and Validation
IWG	Instrument Working Group
IWG	Instrument Working Group
IXO SCG	IXO Study Coordination Group
IXO	International X-ray Observatory
J/T	Joule/Thompson
JAXA	Japan Aerospace Exploration Agency
JDEM	Joint Dark Energy Mission
JEXT	Joint European X-ray Telescope
JFET	Junction Field Effect Transistor
JHU/APL	Johns Hopkins University/Applied Physics Laboratory
JKCS	John Keells Computer Services
JPL	Jet Propulsion Laboratory
JSB	Japan Storage Battery
JT	Joule-Thomson
JWST	James Webb Space Telescope
JY	Jobin Yvon
K	Kelvin
kbits	kilobits per second
kByte	Kilobyte
KDP	Key Decision Point
keV	kilo electron Volts
kg	kilogram
kHz	kiloHertz

## Acronym list as of July 7, 2009

KOH	Potassium Hydroxide
KSC	Kennedy Space Center
ksec	kilosecond
LCC	Life Cycle Cost
LED	Light-emitting diode
LEO	Low Earth Orbit
LETG(S)	Low Energy Transmission Grating (spectrometer)
LiIon	Lithium Ion
LISA	Laser Interferometer Space Antenna
LL	Lincoln Labs
LLNL	Lawrence Livermore National Labs
LM	Lockheed-Martin
LMXB	Low Mass X-ray Binary
LOA	Letter of Agreement
LRD	Launch Readiness Date
LRF	Line Response Function
LRO	Lunar Reconnaissance Orbiter
LRR	Launch Readiness Review
LRS	Laser Ranging Sensor
LSST	Large Synoptic Survey Telescope
LST	Large Survey Telescope
LV	Launch Vehicle
LVDS	Low-Voltage Differential Signaling
LVPC	Low Voltage Power Converter
LVPS	Low Voltage Power Supply
LZP	Level Zero Processing
m	meter
M	Million
μsec	microsecond
μm	micrometer
m/s	meters per second
MAP	Microwave Anisotropy Probe
MAR	Mission Assurance Requirements
MASO	Mirror Attachment Stress Optimization
MAXIM	Micro Arcsecond X-ray Imaging Mission
MCR	Mission Confirmation Review
MDR	Mission Definition Review
MEL	Master Equipment List
MEOP	Maximum Expected Operating Pressure
MIP	movable instrument platform
MIRI	Mid-Infrared Instrument
MIT	Massachusetts Institute of Technology
MIXS	Mercury Imaging X-ray Spectrometer
mK	milliKelvin
MLI	Multilayer Insulation
mm	millimeter
MO	Mission Operations
Mo	Molybdenum
MO&DA	Mission Operations and Data Analysis
MOC	Mission Operations Center
MODA	Mission Operations & Data Analysis

## Acronym list as of July 7, 2009

MOR	Missions Operation Review
MOU	Memorandum of Understanding
MPE	Max-Planck-Institut für Extraterrestrische Physik
MRF	Magneto-Rheological Finishing
MRRS	Modulating retro-reflectors
ms	millisecond
MS	Mission Simulation
MSE	Mission Systems Engineer
MSFC	Marshall Space Flight Center
MSR	Mission Systems Review
mT	milliTesla
MUX	Multiplexer
mW	milliWatt
N	Neutron
NAO	New Obligation Authority
NAR	Non-Advocate Review
NAS	National Academy of Sciences
NASA	National Aeronautics and Space Administration
Nb	Niobium
NEAR	Near Earth Asteroid Rendezvous
NeXT	Non-thermal Energy eXploration Telescope
NGST	Next Generation Space Telescope
Ni	Nickel
NICMOS	Near Infrared Camera and Multi-Object Spectrometer
NIR	Near-Infrared
NIST	National Institute of Standards and Technology
nm	nanometers
NMP	New Millennium Program
NOA	New Obligation Authority
NPD	NASA Policy Directive
NPG	NASA Procedure and Guideline
NPR	NASA Procedural Requirement
NRA	NASA Research Announcement
NRAO	National Radio Astronomy Observatory
NRC	National Research Council
NRE	Non-recurring Engineering
NS	Neutron Star
NSF	National Science Foundation
NSS	NASA Safety Standard
NTD	Neutron Transmutation Doped
NTD Ge	Neutron Transmutation Doped-Germanium
NTO	Nitrogen tetroxide (or dinitrogen tetroxide), rocket fuel
NuStar	Nuclear Spectroscopic Telescope Array
NW	Northwestern University
OAB	Osservatorio Astronomico Di Brera
OAP	Optical Alignment Pathfinder
OB	Optical Bench
OBC	On-Board Computer
OCC/SOC	Operations Control Center/Single Operations Center
OD	Orbit Determination
OD	Outside Diameter



## Acronym list as of July 7, 2009

ODRM	Observation Design Reference Mission
OGS	Objective Grating Spectrometer
OM	Observatory Manager
OM	Optics Module
ORR	Operations Readiness Review
OS	Operating System
OSO-8	Orbiting Solar Observatory 8
OSS	Office of Space Science
OSSE	Oriented Scintillation Spectrometer Experiment
OSSMA	Office of Systems Safety and Mission Assurance
P	parabolic
PA	Power Amplifier
PAF	Payload Attach Fitting
PBB	Pre-Amplifier Bias Box
PDR	Preliminary Design Review
PDU	Power Distribution Unit
PER	Pre-Environmental Review
PG	Procedure Guideline
PHA	Pulse Height Amplitude
PI	Principal Investigator
PLF	Payload Fairing
PM	Project Manager
PMD	Propellant Management Device
PMT	Photo Multiplier Tube
POP	Program Operating Plan
PoST	Position Sensitive TES
PPE	Pulse Processing Electronics
PPL	Preferred Parts List
PPT	Peak Power Tracker
PRT	Positive Resistance Thermistors
PRICE-H	Parametric Review of Information for Costing and Evaluation Hardware
PS	Pseudo-Random
PSE	Power Supply Electronics
PSF	Point Spread Function
psi	pounds per square inch
psia	pounds per square inch, absolute
PSR	Pre-Shipment Review
PST	Point Source Transmittance
Pt	Platinum
QA	Quality Assurance
QCD	Quantum Chromodynamics
QE	Quantum Efficiency
QPO	Quasi-Periodic Oscillations
QSO	Quasi-Stellar Objects
QSR	Quarterly Systems Review
R&D	Research and Development
RA	Right Ascension
RAM	Random Access Memory
RASS	ROSAT All-Sky Survey
RF	Radio Frequency
RFC	RGS Focal Plane Camera

## Acronym list as of July 7, 2009

RFI	Request for Information
RFP	Request for Proposals
RGA	RGS Grating Array
RGS	Reflection Grating Spectrometer
RHESSI	Reuven Ramaty High Energy Solar Spectroscopic Imager
RIE	Reactive Ion Etch
RIXOS	ROSAT International X-ray/Optical Survey
RMD	Reference Mission Description
RMS	Root Mean Square
ROCSAT	Republic of China Satellite
ROM	Rough Order of Magnitude
ROSAT	Röntgensatellit - a German X-ray satellite telescope
ROSES	Research Opportunity and Space and Earth Science
ROSS	Research Opportunities in Space Science
RSDO	Rapid Spacecraft Development Office
RSS	Root Sum Square
RT	real time
RTOS	Real-time Operating System
RW	Reaction Wheel
RWAs	Reaction Wheel Assemblies
RXTE	Rossi X-ray Timing Explorer
RY	Real Year
S	Sulfur
S/A	Solar Array
S/C	Spacecraft
SAFIR	Submillimeter and Far Infrared Experiment for SOFIA
SAFT	Societe Accumulateur Fixe Traction
SAI	Swales Aerospace, Incorporated
SAM	System Assurance Manager
SAO	Smithsonian Astrophysical Observatory
SAX	Satellite per Astronomia X-ray
SBIL	Scanning Beam Interference
SBIR	Small Business Innovative Research
SCG	Study Coordination Group
SCUBA	Submillimeter Common User Bolometer Array
SDD	Silicon Drift Diodes
SDO	Solar Dynamics Observatory
SDP	Safety Data Package
SDRAM	Synchronous Dynamic Random Access Memory
SDS	Science Data System
SDT	Science Definition Team
SE	Systems Engineer
SEE	Single Event Effects
sec	second
SEM	Scanning Electron Microscope
SEP	Science Enhancement Package
SEU	Single Event Upset
SI	Science Instrument
Si	Silicon
SIS	Solid-State Imaging Spectrometer
SM	Spacecraft Module

## Acronym list as of July 7, 2009

SMA	Safety and Mission Assurance
SMBH	SuperMassive Black Hole
SMBH	Supermassive Black Holes
SMILES	Superconducting Submillimeter-Wave Limb-Emission Sounder
Sn	Tin
SNL	Space Nanotechnology Laboratory
SNR	Signal-to-Noise Ratio
SOC	Science Operations Center
SOHO	Solar and Heliospheric Observatory
SOPHIA	Stratospheric Observatory For Infrared Astronomy
SPT	South Pole Telescope
SQUID	Superconducting Quantum Interference Device
SR & QA	Safety, Reliability and Quality Assurance
SR&T	Supporting Research and Technology
SRC	Spectroscopy Readout Camera
SRR	Systems Requirements Review
SSR	Solid State Recorder
ST	Star Tracker
STEP	Satellite Test of the Equivalence Principle
STEREO	Solar Terrestrial Relations Observatory
STIS	Space Telescope Imaging Spectrograph
SWAS	Submillimeter Wave Astronomy Satellite
SWG	Science Working Group
Ta	Tantalum
TAM	Telescope Alignment Monitor
TB	Thermal Balance
TBD	To Be Determined
TBR	To Be Resolved
Tbyte	Terrabyte
TCP/IP	Transmission Control Protocol/Internet Protocol
TDM	time-division-multiplexing
TDRSS	Tracking and Data Relay Satellite System
Te	Tellurium
TES	Transition Edge Sensor
Ti	Titanium
TID	Total Ionizing Dose
TLM	telemetry
TLRD	Top-Level Requirements Document
TM	Telescope Module
TOO	Target of Opportunity
TPF	Terrestrial Planet Finder
TRACE	Transition Region Coronal Explorer
TRIP	Technology Readiness and Implementation Plan
TRL	Technology Readiness Level
TST	Technical Support Team
TT&C	Tracking, Telemetry and Command
TTI	Transfer Trajectory Insertion
TV	Thermal Vacuum
TWG	Telescope Working Group
TWTA	Travelling Wave Tube Amplifiers
UARS	Upper Atmosphere Research Satellite

## Acronym list as of July 7, 2009

UDS	Ultra-Deep Survey
ULX	UltraLuminous X-ray source
USO	Ultra Stable Oscillator
UTC	Universal Time Code
UV	Ultraviolet
UW	University of Wisconsin
W	Watt
V	Velocity
V&V	Verification and Validation
VDA	Vapor Deposited Aluminum
VISNAV	Vision-based navigation sensor (enhanced capability for the star tracker)
VLA	Very Large Array
VLSI	Very Large Scale Integration
VLT	Very Large Telescope
VMA	Vertical Mount Assembly
VP-SBIL	Variable Period-Scanning Beam Interference Lithography
VSWR	Voltage Standing Wave Ratio
WBS	Work Breakdown Structure
WFI	Wide Field Imager
WHIM	Warm-Hot Intergalactic Medium
WIRE	Wide-field Infrared Explorer
WYE	Work Year Equivalent
XEUS	X-ray Evolving Universe Spectroscopy
XGS	X-ray Grating Spectrometer
XIS	X-ray Imaging Spectrometer
XMM	X-ray Multi-Mirror Mission
XMS	X-ray Microcalorimeter Spectrometer
XO	Crystal Oscillator
XPOL	X-ray Polarimeter
XQC	X-ray Quantum Calorimeter
XRB	X-ray Binaries
XRCF	X-ray Calibration Facility
XRS	X-ray Spectrometer
XTE	Rossi X-ray Timing Explorer
YTD	year-to-date
z	redshift
Zn	Zinc
ZOC	Zero Order Camera